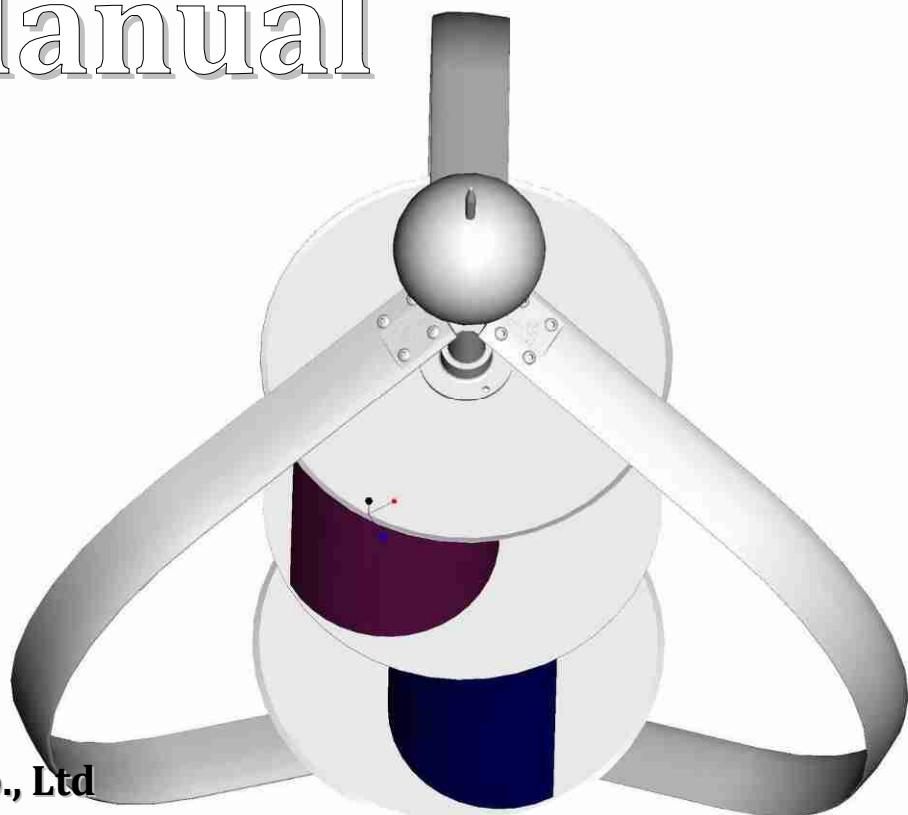


CXF-600W



Vertical Axis Maglev Wind Turbine

User Manual



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Version 1

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WARNING

THIS USER'S MANUAL PROVIDES INSTRUCTIONS AND GUIDELINES FOR ASSISTANCE WITH ASSEMBLY OF THE TIAMR'S CXF-600W VERTICAL AXIS WIND TURBINE (CXF-600W VAWT), ALTHOUGH THE CXF-600W VAWT HAS BEEN DESIGNED AS EASY AS POSSIBLE FOR THE INSTALLATION, IT STILL REQUIRES SPECIALIZED SKILLS, TOOLS AND EXPERIENCE AS WELL .FOR THE PURPOSES ASSEMBLING, INSTALLING, OPERATING AND MAINTAINING THE CXF-600W VAWT, WE ASSUME THAT PERSONNEL WHO INVOLVED IN THE WHOLE PROCESSES HAS THE SKILLS, TOOLS REQUIRED TO DO SO. NO ONE SHOULD ATTEMPT TO ASSEMBLE, INSTALL, OPERATE AND MAINTAIN THE CXF-600W WTG SYSTEM WITHOUT THE NCESSARY SKILLS, EXPERIENCE, TOOLS AND SAFETY EQUIPMENT.

DISASSEMBLING THE PARTS FROM ORIGINAL IS RESTRICTED.ALL PREASSEMBLED PARTS ARE FACTORY ADJUSTED, BALANCED AND TESTED. TIAMR MEGLEV TECHNOLOGY CORPORATION ASSUMES NO WARRANTIES AND LIABILITIES OF DOING SO.

Shenzhen TIMAR scenery Energy Technology Co., Ltd. (TIMAR) ASSUMES NO DIRECT OR CONSEQUENTIAL LIABILITY IF FACULTY OR DANCEROUS ASSEMBLING, INSTALLATION OR MAINTENANCE PRACTICES ARE PERFORMED.PLEASE CONTACT TIMAR IF CONSULTATION OR ASSISTANCE IS REQUIRED.

Shenzhen TIMAR scenery Energy Technology Co., Ltd.RECOMMENDS THE CXF-600W VAWT SYSTEM SHOULD BE SITED ACCORDINGLY IN AN EXCLUSION ZONE WITH CONTROLLING PUBLIC ACCESS .APPROPRIATE WARNING SIGNS SHOULD BE PLACED ON THE OPERATING SITE.

THE CXF-600W SHOULD NOT BE INSTALLED NEAR UNPROTECTED POWER LINES. TREES OR ANY OBJECTS THAT WOULD POSSIBLY CAUSE THE HAZARDS OF THE OPERATION.

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DISCALIMER

Although TIMAR recommends reading the entire manual thoroughly prior to assembly and installation to ensure proper performance and safety, this manual is intended as a guide only. It should not be considered as a replacement of professional services or as a definitive text for assembling and installing the CXF-600W VAWT system.

TIMAR makes no warranties by either expressed or implied that the information contained in the manual is accurate or complete. TIMAR makes no warranties of fitness for a particular purpose and /or site. TIAMR will not be responsible for any direct or consequential damages. or an incidental expense .

All instructions, figures and diagrams are believed to be accurate at the time of printing. The success and safety in working with tools depend greatly on individual accuracy, skill and caution. For this reason, TIMAR is not only able to guarantee the result of any contained procedure in the manual, nor can they assume responsibility for any damage to property or injury to persons resulting from procedures contained in this manual. Persons who engage in the procedures take their own responsibility and risk.

Actual power resources and selected site conditions will highly affect the energy production, which will vary with wind turbine maintenance, surrounding environment, therefore, TIMAR makes no representation or warranties regarding energy production .

Wind generators, like other sources of electrical power, Must be installed following the guidelines established by local and national regulations. Please consult a local electrical contractor for details and regulations.

The information and all specifications contained within this manual are subject to change without notice.

1. Safety Precautions

The CXF-600W is designed with user safety in mind. However, there are inherent dangers involved with any structural, mechanical and electrical equipment, the surrounding environment as well.

Safety must be the primary concern as you plan the location, assembly, installation and operation of the CXF-600W VAWT system. Be aware of electrical, mechanical and rotor blade hazards.

This Owner's manual contains important instructions, guidelines and safety notes that should be followed during the installation and maintenance of the TIMAR's CXF-600W VAWT system.

Please read thoroughly and follow the instructions in this USER'S Manual before assembling and installing the CXF-600W VAWT.

Please refer to the following symbols which are used throughout this manual to indicate potentially dangerous situations, important safety instruction or important notes for you to know.



This **WARNING** symbol indicates a possible dangerous condition.

Please use extreme caution when processing the procedure.



This **CAUTION** symbol identifies an improper operation that could result in critical safety issue or damage to the system controller or related devices.



The **NOTE** symbol describes an important procedure or issue for you to know to properly and safely operating the device.

1.1 Mechanical Hazards

Rotating blades present the most serious mechanical hazard. The CXF-600W rotor blades are made of very strong anodized aluminum. Some edges of the blades are sharp. Please do not touch those sharp blades are not as sharp. They still will cause serious injury when they start rotating, even at low speed.

WARNING

- *NEVER TOUCH THE RUNNING ROTOR.*
- *NEVER TRY TO STOP THE ROTOR BY HAND*
- *DO NOT INSTALL THE CXF-600W VAWT SYSTEM WHERE ANYONE CAN APPROACH THE PATH OF THE BLADES.*
- *AVOID ANY OBJECTS TOUCHING THE RUNNING ROTOR.*

1.2 Electrical Hazards

The CXF-600W VAWT system is equipped with sophisticated generator and designed to provide protection from electrical dangers.

Heat in wiring system is often a result of too much current flowing through and undersized wire or through a bad connection. It is important to follow the suggested wire-sizing chart to ensure a safe electrical system.

The battery, if applied, should never be short-circuited as it will result a danger of setting the battery and cable on fire. In order to avoid the threat and protect the cabling, fuses should be installed in the lines connecting to the battery.

WARNING

- *WIRING CABLE WITH INSUFFICIENTLY DIMENTIONED CROSS SECTION CAN CAUSE ELECTRICAL FIRE.*
- *NEVER SHORT-CIRCUIT THE BATTERY IF APPLIED.*



1.3 Assembly

The CXF-600W VAWT System is designed in “All Most Ready to Use” format and shipped with factory pre-assembled packing. The only assembly work required is Darrieus blades assembly. This User’s Manual will guide you through the assembly procedures with detailed illustrations.

NOTE

- *please carefully read the assembly instructions in this manual before proceeding.*
- *it is important to have a suitable working environment for performing the assembly tasks.*
- *Refer to the suggested list of tools required for the assembly and have all of them ready before proceeding.*

WARNING

- **DUE TO THE SIZE AND WEIGHT OF THE CXF-600W VAWT SYSTEM, PLEASE ALWAYS KEEP SAFETY IN MIND WHILE PERFORMING THE ASSEMBLY PROCEDURES.**
- **AWAYS WEAR SAFE HELMET AND GLOVE**

1.4 Installation

A fall from the height at which a wind turbine is ordinarily mounted will often result in death or serious injury. Therefore whenever practicable carry out as much work as possible on the wind turbine at ground level. If it is necessary to work on the installation at such height then use an appropriate access system such as a mast that is designed to carry the load of a person; a man-rated winch or rope access system; a hydraulic lift or other safe working platform. Wear appropriate safety equipment and make the general working area as tidy and safe as possible. Work during the daylight on windless days .Above all else think carefully about what u need to do and plan your work carefully, have all the tools and equipment ready before your start.

CAUTION

- *Installation procedures should be performed as much as possible at ground level.*
- *Use safety harnesses, safe Helmets, gloves, etc.*
- *Make sure that all batteries, if applied, are disconnected from the system throughout the installation process.*

- *The CXF-600W generator is short-circuited to prevent unintended rotating during the shipment. Please install the extension cable on the ground level and keep it short-circuited throughout the installation process.*
- *Please keep the rotor straight up or lie on the suggested V-Block stands at all –time during the installation process to prevent the blades twisted or lost balance.*
- *Please perform the installation at a calm and windless day.*

1.5 Operation

Please check the support structures, blades and electrical system on regular basis.

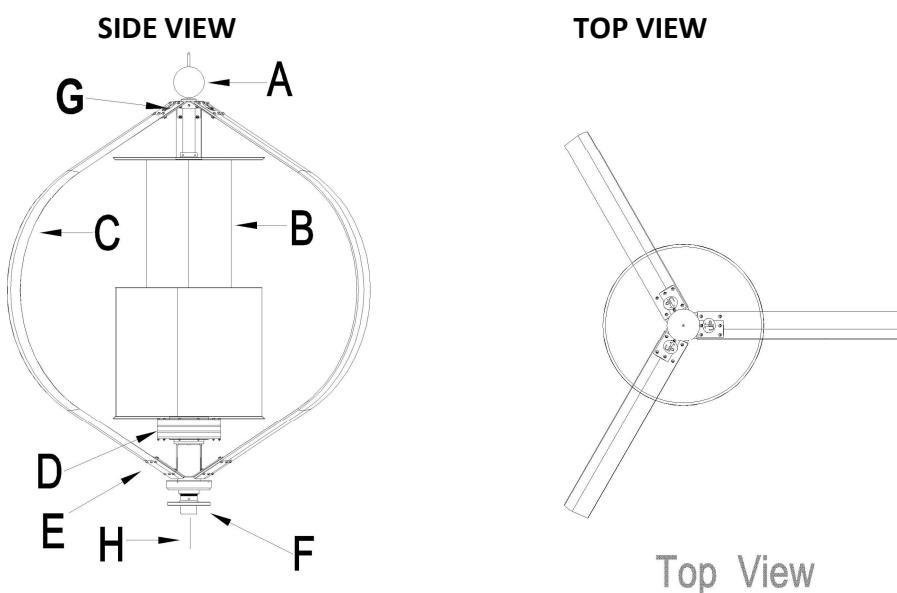
- Even though the rotor blades are very strong, however, if they come in contact with a solid object, they can be distorted or even broken.
- When perform routine inspections , or at anytime you must approach the path of the blades, please disconnect the power leads from the batteries and short-circuit the wind turbine output leads (use the Stop Switch after installation or tie the output leads together) to stop the rotor blades from rotating. The CXF-600W is designed to be shut down through the use of stop switch (brake switch).
- NEVER APPROACH THE TURBINE DURING OPERATION.

2. INTRODUCION

The CXF-600W is a hybrid Vertical Axis Wind Turbine (VAWT) system which combines drag-based design and lift-based design. It incorporates an S-type of Savonius rotor and three airfoil blades of egg-type Darrieus to maximize the output performance.

The following Figure 2-1 shows a general view and major components of the CXF-600W VAWT system.

Figure 2-1 General View of the CXF-600W VAWT SYSTEM



Parts	Description
A	Lightening Arrestor
B	S-Type Savonius
C	3-Darrieus Blade with Built-in Airfoil
D	3-Phase, Direct-Drive, Weather-Sealed, Mechanically Integrated Permanent Magnet Generator.
E	Lower Darrieus Blades Connector
F	Damper
G	Upper Darrieus Blades Connector
H	3-Phase, Generator Wires

2.1 CXF-600W Specification

The following table shows the technical specification of the CXF-600W.

Table 2-1 CXF-600W VAWT Technical Specification

General Information	
Rotor Diameter:	1320mm
Height:	1320mm
Weight:	40 Kgs
Blades:	
Number of Blades:	3
Blade Material:	Anodized Aluminum Alloy
Operate Mode	
Start-up Wind Speed:	1m/s
Cut-in Wind Speed:	2.5m/s
Cut-out Wind Speed:	15m/s
Survival Wind Speed:	65m/s
Safety Mechanism	
Over Speed Braking:	Yes. (Setup by Power Controller)
Manual Brake:	3-phase short-circuit Switch
Generator	
Type:	AC, Direct Drive, Weather Sealed, 3 Phase Synchronism PMG.
Rated Output:	600W
Mounting	
Foundation Mounting:	Min. Height above ground: 3M
Roof Mounting:	Min. Height above Roof: 3M
Bedplate Mounting:	Used where deep excavation cannot be applied
Warranty	
Limited Warranty:	Two years on components

2.2 CXF-600W Standard Packing

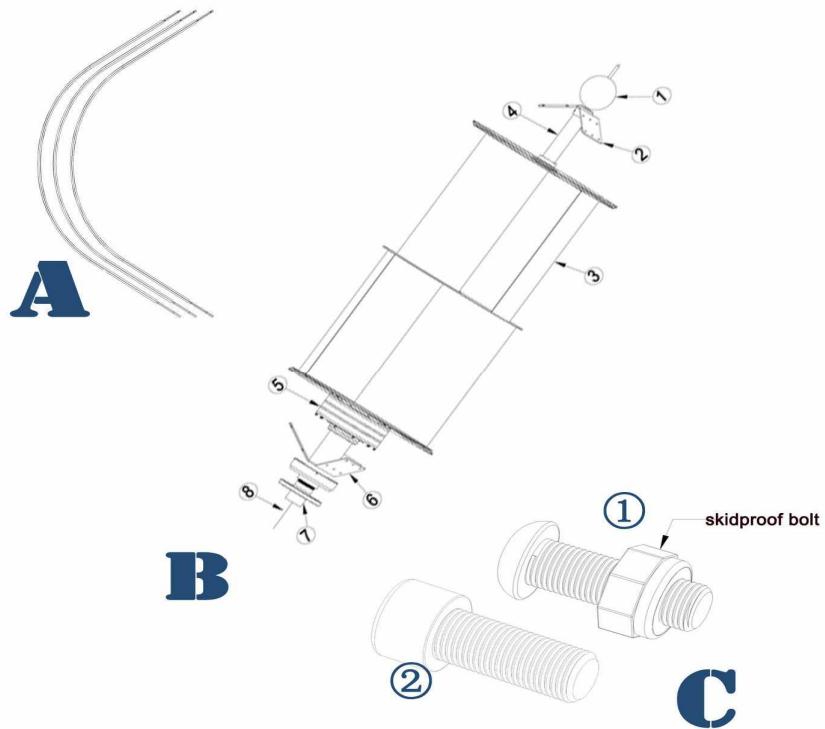
Before starting the installation, please check all components you receive from the shipment with the packing list that comes with the purchase invoice or the enclosed parts list in the shipment. Ensure that you receive all standard components or parts for the CXF-600W VAWT system accordingly. If any missing parts from the original packing, please contact TIMAR for replacement.

The standard packing of CXF-600W VAWT includes parts listed in the following Table2-2. Please also refer to Figure 2-2 for part locations. Detail assembly instructions will be discussed in the Chapter 4- Assembly and installation.

Table 2-2 list of CXF-600W system component:

Labels	Description	Qty. Included
A	Anodized Aluminum Blade (Assemble Needed)	3
B	Pre-assembled Components	1 set
1	Lightening Arrestor	1
2	Upper Blades Connecting Plate	1
3	S-type Savonius	1
4	Vertical Axis	1
5	600W, PM Generator	1
6	Lower Blades Connecting Plate	1
7	Mast Connector with Damper	1
8	R.S.T Generator Wiring Cables	3
C	Bolt Sets	
1	M10×25mm hex head Skidproof bolts and nuts (set)	24
2	M10×25mm Round Hex bolts	6
	plain cushion	6
	spring pad	6

Figure 2-2 CXF-600W System Standard Packing Contents



2.3 CXF-600W Wind Power System Controller

The CXF-600W VAWT system is used the type of 04KZWM06W12V-B. The descriptions and Specification Controller is detailed in controller User Manual

Figure 2-3 System Controller



04KZWM06W12V-B Wind-Solar Hybrid Con

2.4 CXF-600W Optional Parts

This CXF-600W VAWT System is designed with simplicity in mind. So there are just a few parts needed which all included in the standard package. Concerning the shipping cost and different applications applied by customers, the required mounting mast to setup the CXF-600W Wind Turbine is not included in the standard package. it would be an optional part based on customer's choice.

The detail description of the mounting mast will be explored in Chapter 3.

3. Preparation of Assembly and Installation

Before going through the CXF-600W VAWT system installation procedures, please double check parts included in the package. Prepare all required tools and equipments accordingly and have them ready on hands. More importantly, all safety issues have been well thought and followed.

3.1 Selecting Location

The CXF-600W Wind Turbine is designed with flexibility to fulfill users' applications. It can be installed along the sea shore, on the mountain, in the city, urban area, or just right on top of the roof of the building. The major key factor of affecting the performance of CXF-600W VAWT wind turbine for all proposed applications is the location of optimizing wind energy.

 **NOTE**

We assume that the proper site of installing the CXF-600W VAWT system has been well evaluated by users themselves for optimizing the wind energy environment before any installing procedures performed.

 **WARNING**

- *DO NOT install the CXF-600W VAWT system at a site where anyone can easily approach the rotating blades.*
- *DO NOT install the CXF-600W VAWT system at a site surrounded by obstructions. For example, trees, power lines, etc.*
- *DO NOT install the CXF-600W VAWT system at a site with improper structure to hold the CXF-600W VAWT system.*

 **CAUTION**

- *always follow your local regulations, codes about restrictions applied to such system installation.*
- *Always have your CXF-600W VAWT grounded to avoid the lightning strike.*
- *Perform the installation of the CXF-600W VAWT system in a calm and windless day.*
- *Perform all required assembly for the CXF-600W VAWT system at ground level.*

3.2 Mast Preparation

As mentioned before, shipping charge of the mast made by TIMAR will be costly. If you prefer making your own mast for CXF-600W VAWT system rather than purchasing from TIMAR, we will show you here how the mast can be made by your local supplier.

In the Figure 3-1, the Mast Specification was originally designed and tested on the CXF-600W VAWT system. It has been approved and applied as the standard CXF-600W VAWT System. It is

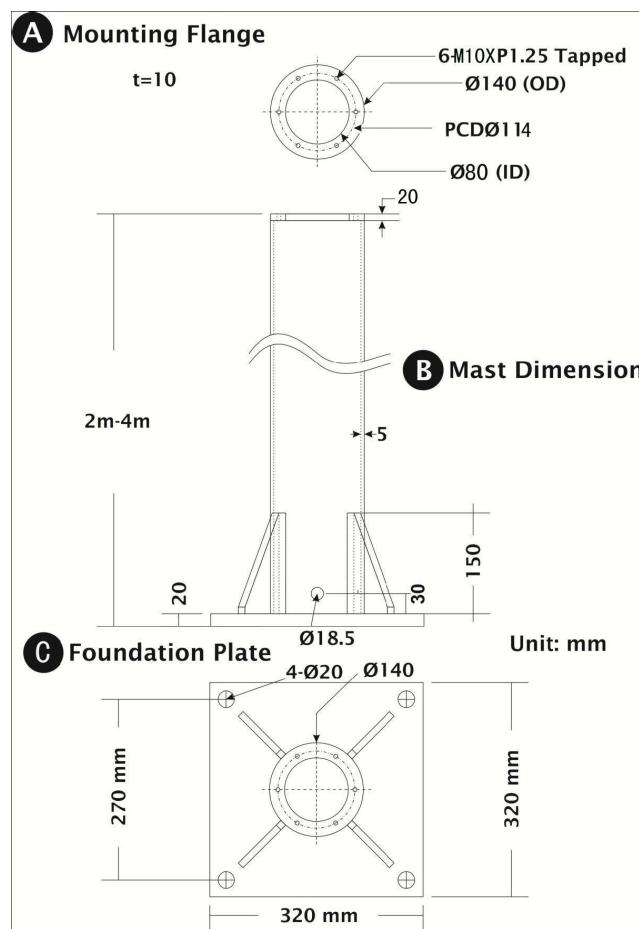
important to follow the diameters shown in Figure3-1 for Mounting Flange and Mast of the CXF-600W VAWT System.

⚠ CAUTION

- Please carefully check the structure of the building if you are going to install CXF-600W VAWT system on the roof, make sure the structure is strong enough to endure CXF-600W VAWT system in terms of total weight, impact from gusty wind or earthquake, etc. TIMAR suggests the length of the mast is 2m for the roof installation and 3m for the ground.
- carefully check the surrounding area when determines the length of the mast. Avoid any existing objects that affect the performance of wind energy or cause hazards.

The following Figure 3-1 shows the diagram for making the mast.

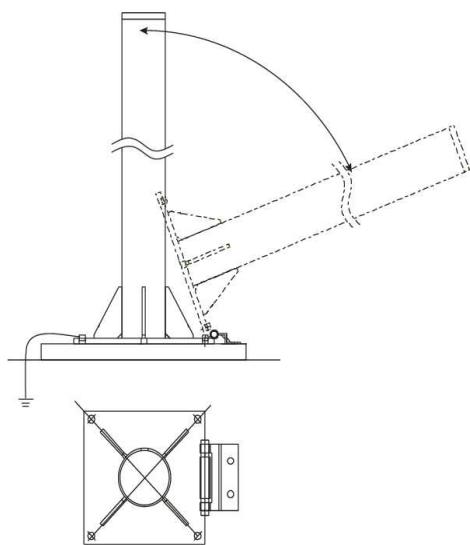
Figure 3-1 Dimension for Mast



A	<p>This portion shows the dimension of the mounting flange which should be welded on top of the mast for connection with CXF-600W VAWT System.</p> <ul style="list-style-type: none"> ● Flange Inner Dia.= \varnothing 95mm ● Flange Outer Dia.= \varnothing 140mm ● 6-\varnothing 8mm×P1.25 Tapped bolt holes on PCD \varnothing 115mm (60°each) ● Flange thickness=10mm
B	<p>Mast Dimension:</p> <ul style="list-style-type: none"> ● Prototype Design material: 140mm×5m/m galvanized steel pipe. ● Mast Outer Dia.= \varnothing 140mm ● Mast Inner Dia.= \varnothing 120mm ● Standard Length of the Mast: 3m ● Mounting flange welded on the top of the mast. ● Foundation Plate welded under the bottom of the Mast with 4 support ribs ($t=10$) ● Drill a 18.5mm diameter hole at 30mm above the bottom of the mast. This hole is reserved for wiring cable exit. If an underground conduit is applied in the concrete foundation, then ignore this exit.
C	<p>Foundation Plate Dimension:</p> <ul style="list-style-type: none"> ● 320mm×320mm ● Thickness=20mm ● 4×\varnothing 25mm bolt holes on 270mm ×270mm ● 4×\varnothing 10mm in thickness of support ribs

Figure 3-2 shows an optional design of the mounting mast. You may use hinge type mechanism at one side of the foundation plate to make an easy way to access the CXF-600W by lowering down or lifting up the mast.

Figure 3-2 Optional Mast Design



3.3 Foundation Guide for CXF-600W

Before constructing the foundation for the CXF-600W VAWT System, read these instructions carefully. These instructions are only intended to be a guide for concrete foundations on the solid soils or suitable roof infrastructure. Please contact your local civil or structure engineer for more information.

3.3.1 Ground Foundation

The foundation should be prepared as 1 cubic meter in dimension (1000m/m x 1000m/m x 1000m/m) depth, dug into the soil. Please follow the diagram shown in the Figure 3-1, make a template of the mast bottom. This template will be temporarily used for holding four Anchor Bolts vertically and electrical conduit (if applied) in the precise position while pouring concrete into the foundation hole later.

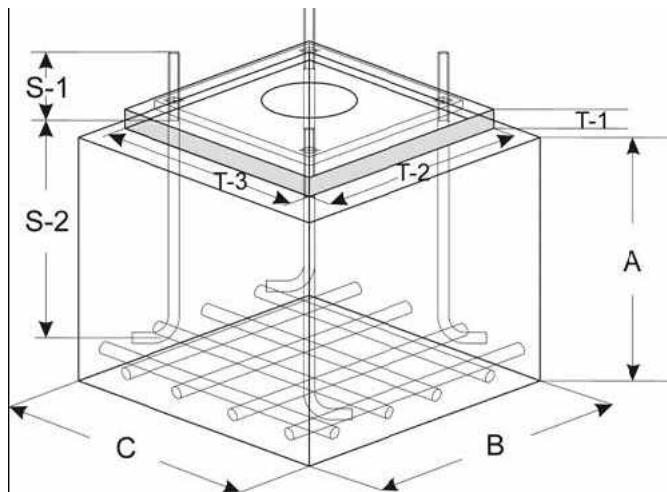
Insert rebar into the foundation hole and jack up to approximately the right height. Prepare the electrical conduit in place before pouring the concrete if a hidden wiring method is applied. Attach the M16 Screwed rods with nuts provided to the template, such that they will hang into the foundation hole from the template. Make sure there have at least 100mm of thread above the concrete level. Fix the conduit through the center of the template and push the other end of the conduit to the side of foundation (if applied).

Add the concrete, Using a vibrating poker to remove air voids from the pour. It is very important to make sure the all four rods are hooked under the rebar. Once the concrete is all poured, make sure that the template has no air voids directly underneath. More importantly, make sure the template is leveled off.

Next, clear excess concrete from above the template and use a suitable cover to prevent the foundation from rain. Wait until the Concrete has set completely before removing the template (It will take at least for one week).

Just remember, a solid with perfect leveled foundation is one of the key factors to achieve the success of the installation.

Please refer to the Figure 3-3 for CXF-600W foundation construction.

Figure 3-3 Ground Foundation Construction Reference

Dimension Chart

A	1 meter	
B	1 meter	
C	1 meter	
T-1	30mm	Concrete
T-2	400mm	Concrete
T-3	400mm	Concrete
S-1	100mm	
S-2	200mm	

List of Material Required

1	1 Cubic meter of concrete-35 Newton or better
2	4-M16 with length of 360m/m galvanized Anchor Bolts. One end is bent into a hook shape.
3	4-M16 Nuts
4	4 Galvanized washers
5	Electrical conduit, 100m/m diameter pipe or similar, maybe needed for underground wiring, if applied.

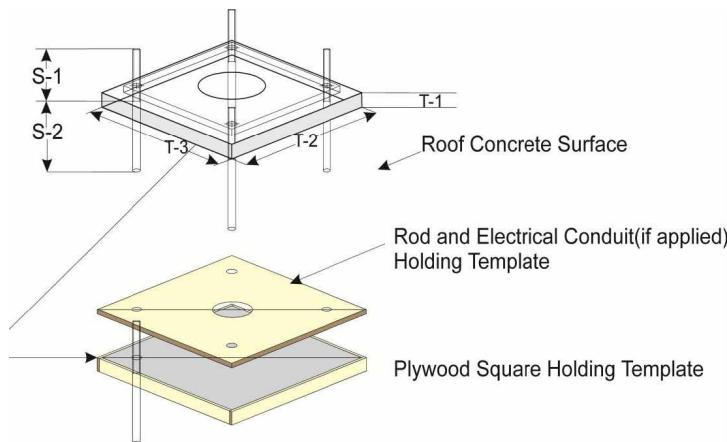
3.3.2 Roof Foundation

Installation of the CXF-600W VAWT System on the roof may be much easier than it is on the ground. But special thought of the building structure has to be carefully taken into account before the installation.

We strongly suggest that the location on top roof surface should be above the concrete beam. Any surface other than concrete, the users should contact their own architect or structure engineer for advice and take their own responsibility for any possible dangers.

Then concrete roof should be thick enough to allow 100mm drilling down from the surface. Please follow the template explained in Section 3.3.1 and use this template as a guide and drill four $\frac{1}{2}$ 20 holes 100mm deep down to the surface. Insert and secure four threaded rod to each hole, use 4mm plywood to make a square holding template with inner dimension T1×T2×T3, pour the concrete into this square template, then put the first template on top of the square template to hold four rods temporarily before the concrete set completely and keep the surface leveled.

Figure 3-4 Foundation for Roof Installation Reference



Dimension Chart

T-1	30mm	
T-1	400mm	
T-1	400mm	
S-1	60mm	
S-2	100mm	

⚠️ WARNING

- *Although the CXF-600W VAWT System is designed to be installed on the roof alternatively, but TIMAR does not recommend to do so unless you are 100 percent sure that the structure of the building is capable of doing so.*
- *Please consult your local structure engineer and carefully evaluate such implementation before taking any further actions.*
- *It is user's responsibility to make sure that structure of the building is able to sustain the force of operating CXF-600W VAWT System on the roof. TIMAR is not responsible for any potential damage or dangerous factors caused by insufficiency of structural design of the building.*
- *Please closely follow your local government's regulations regarding related issues if you are going to install CXF-600W VAWT System on the roof.*
- *If you are going to install the CXF-600W VAWT System on the ground level, please consult your local civil engineer and carefully evaluate the nature of the soil and design of the foundation accordingly.*

4. CXF-600W Assembly and Installation

Before starting the assembly and installation of the CXF-600W Wind Turbine System, Please well prepare all required tools to complete the assembly and installation.

4.1 Tools Required for Assembly and Installation

As the CXF-600W is factory pre-assembled, only a few tools required for finishing entire assembly and installation. We are strongly recommend having a crane with suitable capacity to haul up the mounting mast to desired location and also lift up the CXF-600W to the mounting flange. Please refer to Figure 4-1 for your tool preparation.

Figure 4-1 Required Tools for Assembly and Installation**1 Girder Crane or Crane Truck**

For indoor assembly, you may need a girder crane with capacity of 2 tons and at least 12 meters height of lifting space. If the assembly work is going to be performed outdoor, a crane truck with approximately same capacity will be required. **It is very important to have certified person to operate the crane.**

2 Steel Support Stands

A pair of steel support stands will be required for the assembly procedures. The height of each stand should be approximately 115cm to 120cm. Please also make sure all stands can hold up the weight of the CXF-600 VAWT. (The weight of the CXF-600 VAWT is about 38 kgs)

3 Adjustable Wrenches or Other Proper Wrenches**4 Hex Allen Wrenches: M12 and M16 Hex Allen Wrenches****5 Nylon Slings: At least two Nylon Slings with proper length.****6 Safety Caps and Gloves**

NOTE: FOR YOUR SAFETY, PLEASE WEAR SAFETY CAP AND GLOVE AT ALL TIME.

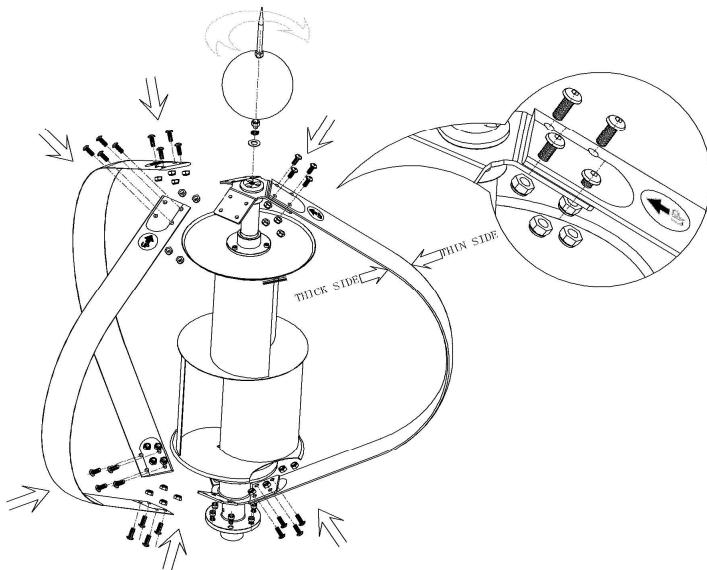
⚠ CAUTION

- We strong recommend you to prepare all suggested tools before processing the assembly and installation
- Please always keep safety in mind while working on the assembly and installation.
- Preparing any extra equipments or safety devices accordingly if instructed by your local authority.

4.2 CXF-600W VAWT Assembly

There are only a couple of steps to assemble the CXF-600W. Please follow the Figure 4-2, 4-3 CXF-600W Assembly Procedures to complete the assembly.

Figure 4-2 CXF-600W Assembly Procedures



Insert 4 M10×25mm Hex Head Skidproof Bolts for each one of the blades on the upper blade connector. Do not lock these four bolts yet until another 3 sets of M10×25mm Hex Head Skidproof Bolts inserted for Lower Blade Connector. Now use Wretch to securely lock blade on upper blade connector and lower blade connector. Repeat this step for second blade and third blade and lower section as well.

The alignment of both upper blade connector and lower blade connector has been factory pre-lined up.

! CAUTION

- Each blade has a mark of "UP" on the side, please connect the "UP" end with the upper blade connector. Do not connect "UP" end with lower blade connector.
- If you are not able to see the "UP" mark on the blade, you may find three M10 holes on both blade and connecting plate, just matching up each hole so you won't assemble the blade with wrong direction.

! WARNING

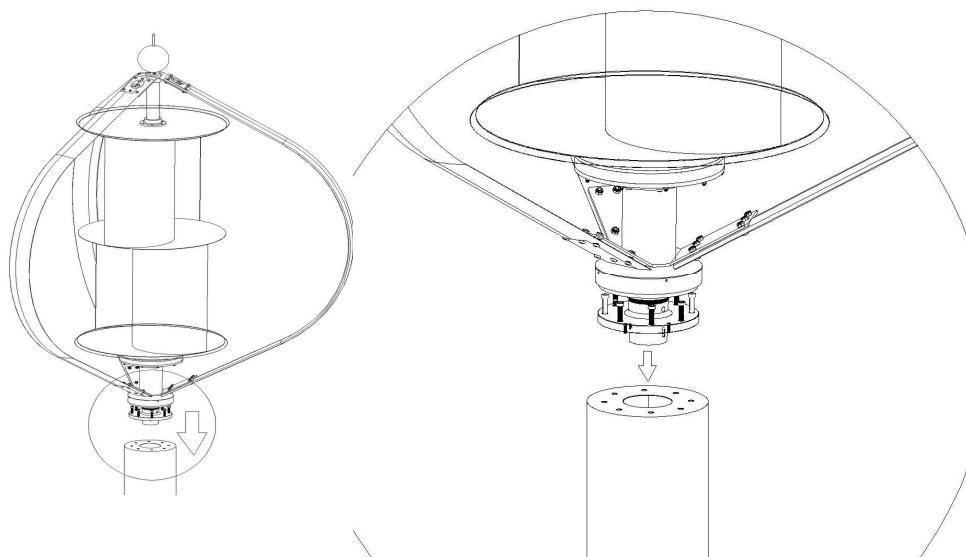
For safety concern, please short circuit the RST Generator Wiring Cables temporarily to stop the rotor from rotation.

4.3 CXF-600W Installation

! WARNING

- Double check with assembly procedures and make sure all screws are securely locked. Any loosen screw will cause serious vibration and parts damaged.
- If you are going to install the CXF-600W VAWT System at certain height, please have proper safety devices ready for proceeding installation.

Figure 4-3 CXF-600W Installation Procedures





- *There are 3 proper sizes of wires should be pre-installed inside the Mast.*
- *securely connect the RST Generator Wire with these pre-installed wires.*

5. Wiring

5.1 General information

Please refer to all local and national codes or special regulations to be followed accordingly before installation. All works on the electrical system like installation, maintenance, and repair should be carried out by qualified technicians and make sure that they read all technical information and instructions contained in related manuals.

The wiring diagram should be planned ahead and make sure all required wiring components are prepared accordingly.



- *Carefully plan all required electrical components, and install electrical components first before any electrical connection.*
- *Make sure that batteries (if applied) should be disconnected all installation works are completed.*
- *All electrical power cables should be physically protected .Run the wires inside the mast of conduit for maximum protection.*

5.2 CXF-600W Wire Size

The cross section of the wire to be used depends on its length, resistance and rated current. All electrical systems lose energy from the resistance of the wire used .Larger wire size has smaller losses, but can be considerably more costly.

Closely look at the site that the CXF-600W VAWT System is to be installed and measure the following distances:

- Distance between CXF-600W VAWT and the location of CXF-600W Controller.

- Distance between the solar panel and the CXF-600W Controller.
- Distance between the photodiode and the CXF-600W Controller.
- Distance between the CXF-600W Controller and the Battery. It is recommended that the length between CXF-600W Controller and Battery is no longer than 5 meters.

Please follow the reference table below for wire sizing:

Table 5-1 Wire Sizing Reference

Distance Between Generator and Controller					
	0-10m	10-20m	20-30m	30-50m	>50m is not suggested.
AWG Gauge	12	12	10	8	

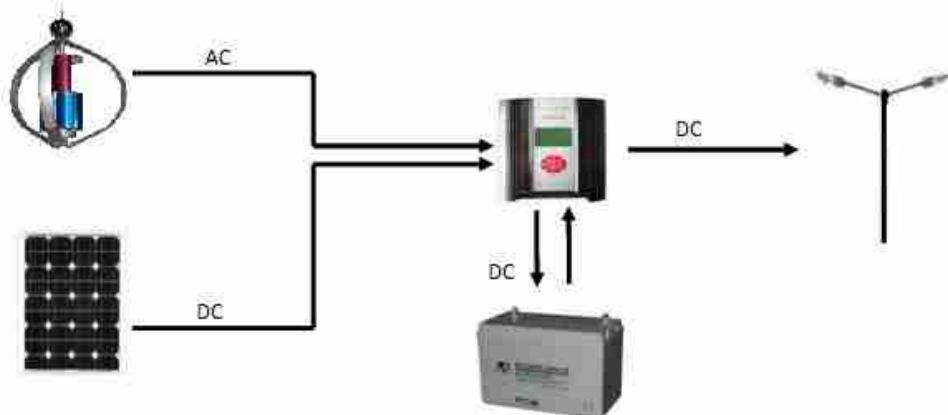
5.3 CXF-600W Wiring Diagram

The CXF-600W VAWT System is designed in collaboration with 04KZWM06W12V-B Wind-Solar Hybrid System Controller. The Wiring Diagram will be illustrated in Figure 5-1 and Figure 5-2.



TIMAR makes no warranty that CXF-600W Wind Turbine System will work with power management devices.

Figure 5-1 Wiring Diagram for Wind turbine and Controller



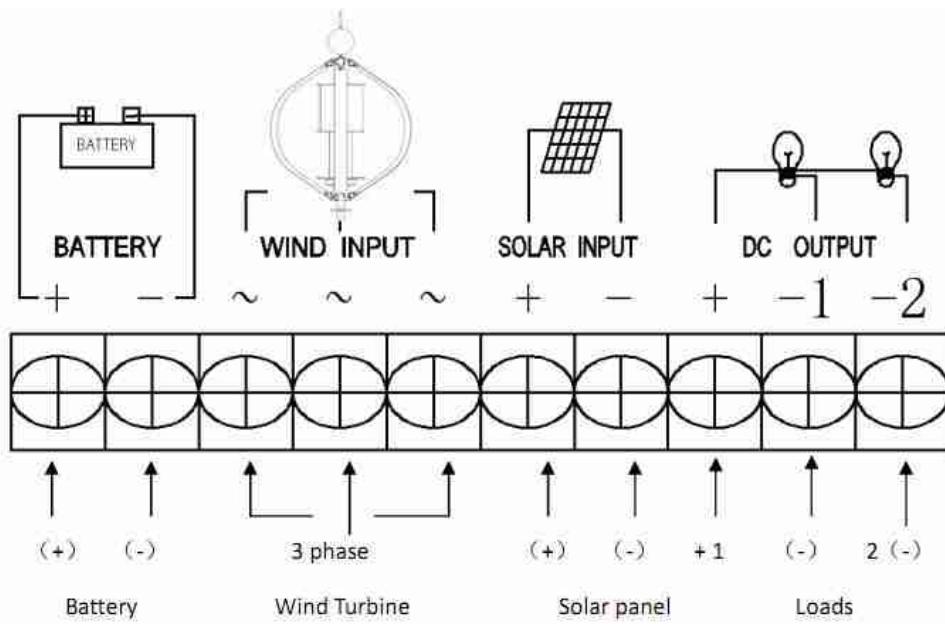
Wind solar hybrid streetlight System

NOTE

Please refer to the User Manual of Controller for CXF-600W for further information

Figure 5-2 Wiring Diagram For Wind Solar Hybrid Wiring Diagram

Figure 5-2 Wiring Diagram of Controller's Terminals



Wiring Diagram of the Controller's Terminals

5.4 Grounding

In order to protect the CXF-600W Wind Turbine System against damage by lightning, static or over voltage, properly grounding the CXF-600W Wind Turbine System is very important. Grounding procedures must be followed along with any local electrical codes.

The design of the grounding system depends on the local conditions, like the site of the installation, type of soil, or a grounding bus already existing. If you are in doubt, contact your local electrician for more information

WARNING

- **SEVERE TURBINE DAMAGE CAN RESULT FROM IMPROPER GROUNDING!**
- **FAILURE TO PROPERLY GROUND WILL VOID THE WARRANTY.**

5.5 Fusing

To protect the battery against short circuit, fuse must be installed in the positive line between the Controller and Battery. The recommended fuse type is 50amp DC Slow-Blow fuse for 12V system or appropriate automatic circuit breaker.

The fuse must be placed as close to the battery as possible, however, not in the same compartment. Unsealed lead-acid batteries have vent holes releasing hydrogen which forms detonating gas with the ambient air. A spark when blowing the fuse (or releasing an automatic circuit breaker) can detonate the explosive mixture.

6. Warranty

Shenzhen TIMAR scenery Energy Technology Co., Ltd.(TIMAR) provides one (1) year limited warranty (warranty Period) for products it manufactures and covers defects in materials, workmanship and quality (Defeats) in the CXF-600W Wind Turbine System. The warranty is valid from the date of invoice to the original user. The limited warranty is also transferable and applied to subsequent owners only within the Warranty Period.

TIMAR will repair or replace the defective products for free under the following conditions:

- The user has notified TIMAR of the Defeat within the Warranty Period.
- TIMAR verifies the existence of a Defeat that is covered within the limited warranty by its inspection, troubleshooting and any possible mean to identify.
- Shipping cost from TIMAR to user for replacement or repaired parts.

TIMAR has the option to use new or reconditioned parts in performing repair or replacement. TIMAR also reserves the right to use parts or improved design in the repair or replacement.

If you purchase the product from our dealer in your area, contact the dealer for repair or replacement or you may contact us directly at the following numbers:

Telephone: 0086-755-33872761

Fax: 0086-755-33872752

Email Address:timar@cntimar.com

Please provide the proof of the purchase (dated invoice) for defective products repair or replacement.

The limited warranty does not apply to any product or part thereof damaged by the following conditions

- Any alteration to the product either internally or externally, or disassembly of the product.
- Not been used in accordance with the User's Manual supplied with the product.
- Installed and used in an unsuitable environment.
- Operation or installation contrary to instructions pertaining to the product.
- Damaged during shipping, mishandled, neglected, improperly installed.
- Repair or service provided an unauthorized repair facility.
- Lightning striking without proper grounding.

TIMAR does not warrant or guarantee the workmanship performed by any person or firm installing its products.

TIMAR MAKES NO WARRANTY AS TO THE ACCURACY, SUFFICIENCY OR SUITABILITY OF ANY TECHNICAL OR OTHER INFORMATION PROVIDED IN MANUAL OR OTHER DOCUMENTATION PROVIDED BY IT IN CONNECTION WITH THE PRODUCT.

ASSUMES NO RESPONSIBILITY OR LIABILITY FOR LOSSES, DAMAGES, COSTS OR EXPENSES, WHETHER SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL, WHICH MIGHT ARISE OUT OF THE USE OF SUCH INFORMATION.

THE USE OF ANY INFORMATION WILL BE ENTIRELY AT THE USER'S RISK.

WARNING

Please Note, the TIMAR'S CXF-600W VAWT System is not intended for use as the power source of life support system or other medical equipments or devices and TIMAR makes no representation or warranty in connection with any use of the product for such purpose.